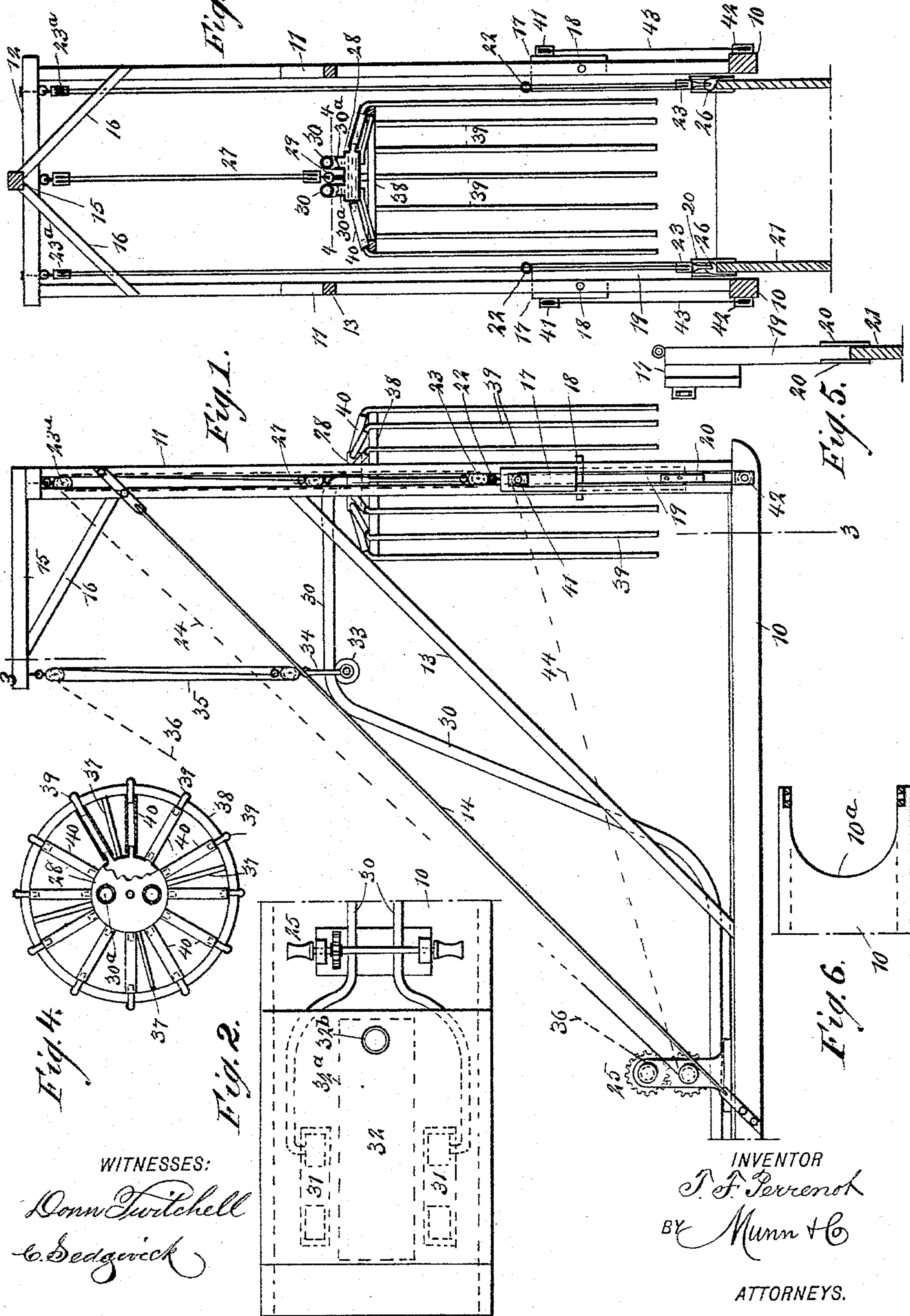


(No Model.)

T. F. PERRENOT.
CAISSON DRIVER.

No. 494,886.

Patented Apr. 4, 1893.



WITNESSES:

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THEODORE F. PERRENOT, OF ROCKPORT, TEXAS.

CAISSON-DRIVER.

SPECIFICATION forming part of Letters Patent No. 494,886, dated April 4, 1893.

Application filed November 22, 1892. Serial No. 452,811. (No model.)

To all whom it may concern:

Be it known that I, THEODORE F. PERRENOT, of Rockport, in the county of Aransas and State of Texas, have invented a new and
5 Improved Caisson-Driver, of which the following is a full, clear, and exact description.

My invention relates to improvements in an apparatus for sinking caissons in gravel or mud so as to form a bridge foundation or
10 a foundation for a breakwater, jetty or any other analogous purpose. Owing to their structure such caissons cannot be driven by repeated blows after the manner of driving piles, but a continuous pressure must be applied to them; and the object of my invention
15 is to produce an apparatus which is adapted to facilitate the handling and guiding of a caisson, which is also adapted to apply an effective and heavy pressure to the caisson,
20 which is provided with a jet apparatus to force the sand and mud from within the caisson and cause it to settle around the outer portion of the same, thus holding it firmly in place, and which in general enables a caisson
25 foundation to be laid with great facility and in a substantial manner.

To this end my invention consists in an apparatus, the construction of which will be hereinafter described and claimed.

30 Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken side elevation of the
35 apparatus embodying my invention. Fig. 2 is a broken plan view of a portion of the apparatus. Fig. 3 is a cross section on the line 3—3 in Fig. 1; but with a caisson in position to be driven and with the jaws of the slide
40 blocks in engagement with the upper edge thereof. Fig. 4 is a broken sectional plan, on the line 4—4 in Fig. 3, of the jet pipes and their connected drum. Fig. 5 is a detail view,
45 partly in section, showing the connection between the driving slide and one side of the caisson; and Fig. 6 is a broken plan view on a reduced scale of the front end of the main platform, showing particularly the manner in
50 which it is cut away to provide for the movements of the jet pipes and caisson.

The apparatus is provided with a substantial platform 10 which is adapted to rest upon any suitable support and upon the caisson already sunk so as to project over said caisson, and be in position to sink another; and the
55 front end of this platform is concaved or cut away, as shown at 10^a, so as to make room for the caisson and the jet pipes. At the front end of the frame is a frame-work substantially like that of an ordinary pile driver, the
60 frame-work consisting essentially of the slotted uprights 11, which are of the usual kind and are arranged on opposite sides of the platform, and a cross piece 12 connecting the
65 tops of the side pieces. The upright frame is braced by the braces 13 and 14 extending from the side pieces to the platform and it may be braced in any other convenient way. At the top of the frame is a cross timber 15
70 which extends parallel with the platform 10, and above the same, this timber being secured to the cross piece 12 and strengthened by the braces 16. In each of the upright side
75 pieces 11 is a slide block 17 which moves in the slot of the side piece in the usual way, and the slide block may be held in an elevated position by a cross pin 18 which extends
80 through a hole in the side piece. On the inner side of each slide block is a depending leg 19 which slides on the inner side of the upright side piece 11, and at its lower end the
85 leg terminates in a pair of jaws 20 which are adapted to clasp the top edge of a caisson 21 so that when pressure is applied to the slides 17 the caisson will be forced downward.

On each slide 17 at its inner side and upper end is a ring 22 adapted to engage the lower pulley block 23 of an ordinary tackle, the upper block 23^a being suspended from
90 the cross piece 12. The tackle has the ordinary hoisting rope 24 which extends to a windlass 25 on the platform, which windlass may be operated either by hand or power. The windlass 25 is not shown in detail as its
95 construction is not claimed and any ordinary windlass may be used.

By means of the tackle on each side of the upright frame the slides 17 and legs 19 may be raised and lowered. The tackles referred to
100 are also used for handling the caisson 21 and

placing it in position, and in so doing, the blocks 23 are detached from the rings 22 and hooked to straps 26 on the top edge and opposite sides of the caisson. By properly manipulating the tackle, it will be seen that the caisson may be drawn upward and swung to the required position and then lowered through the concaved or recessed portion 10^a of the platform.

From the center of the cross piece 12 is suspended a tackle 27 of the usual kind which may also be operated from the windlass 25, and the lower block of this tackle is adapted to engage a ring 29 on the top of the water drum 28, which drum is adapted to be raised and lowered between the uprights or side pieces 11, and the drum has on its upper side nipples 30^a which connect with pipes or hose 30, and the latter lead downward and backward on the platform 10 and connect with steam pumps 31 which supply water under pressure to the drum. The steam pumps are preferably arranged under a housing 32 on the rear end of the platform, see Fig. 2, and a boiler 32^a having a suitable stack 32^b may be arranged beneath the housing to drive the pumps.

The pipes 30 are supported on a roller 33 which is carried by a bail 34 and suspended by a tackle 35 from the free end of the timber 15, and this tackle is operated by the ordinary hoisting rope 36 which also connects with the windlass 25. A circular rim 38 is arranged nearly opposite but a little below the water drum 28 and the rim is supported by spokes 37 connecting it with the drum. Suspended from the rim is a series of jet pipes 39 which thus form a cylindrical group, and the diameter of the cylinder formed by the pipes is such that it may be dropped downward into the caisson 21. The upper ends of the pipes 39 are bent inward and connect with the water drum 28 by short pipes or hose 40, and consequently the water which is forced under pressure into the drum is distributed into the jet pipes and forced downward and outward with considerable power.

The pressure is applied to the caisson by means of tackles on the apparatus, and to this end each slide block 17 has on its outer side a sheave pulley 41, while a similar one 42 is secured to the platform 10 beneath the slide block, and the operating ropes 43 extend from the upper sheave pulleys 41 to the windlass 25.

The operation of the apparatus is as follows: The platform 10 is brought into the correct position, the jet pipes are hoisted upward by the tackle 27 so as to be out of the way, and the pulley blocks 23 of the side tackles are secured to the straps 26 of a caisson and the latter is drawn into position between the uprights or side pieces 11 and then dropped downward through the water into the sand or gravel at the bottom. The pulley

blocks 23 are then disconnected from the caisson and hooked to the rings 22 of the slides 17, the pins 18 are removed from beneath the slides and the slides and their legs 19 are lowered until the jaws 20 engage the upper edge of the caisson 21 at opposite points as shown in Fig. 3. The jet pipes are then lowered so as to extend into the caisson and the steam pumps 31 are started so as to force water through the pipes 30 and jet pipes 39, which causes powerful streams to issue from said pipes, and the sand and mud are driven from the interior of the caisson beneath its lower edge and deposited on the outside. At the same time the ropes 44 of the lower tackles are operated so as to pull downward on the pulleys 41 and slide blocks 17, and the pressure is thus applied directly to the caisson; and it will be readily seen that a very heavy pressure may be applied in this way so that, under the combined action of the heavy pressure and the jet pipes, the caisson is quickly forced to place.

It will be seen that the gravel, and other material which is expelled from the caisson, settles around it and consequently the caisson is perfectly immovable after it is sunk.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with the frame having parallel vertical guide ways, of the slide blocks mounted in said ways and provided with jaws to engage the upper edge of a caisson at opposite points and means for applying pressure to the said blocks, substantially as set forth.

2. An apparatus for sinking caissons comprising a frame having parallel vertical guide ways, slide blocks mounted in said ways and adapted to engage the upper edge of a caisson at opposite points and force it down, and a vertical cylindrical series of pipes, connected at their upper ends, adapted to descend between the guide blocks down into the caisson and having discharge outlets in their lower ends to form jets to loosen the material on which the caisson is to be sunk and force it outwardly under the lower edge thereof and means for supplying said series of pipes, substantially as set forth.

3. In a caisson sinking apparatus the combination with a frame, a vertical cylindrical series of jet pipes 39 open at their lower ends, an annular support 38 with which the upper ends of the pipes are connected, a drum between and connected with the upper ends of said pipes, a supply pipe connected with the drum and means for lowering the series of jet pipes into and raising them out of the caisson, substantially as set forth.

4. In an apparatus of the character described, the combination with the upright frame and its supporting platform, of slide

blocks held to move vertically in the frame, clamping jaws carried by the slide blocks and adapted to engage the head of the caisson, pulleys carried by the slide blocks and by the platform, and operating ropes connecting the pulleys and connecting also with a windlass whereby the winding of the rope will force

downward the slide blocks, substantially as described.

THEODORE F. PERRENOT.

Witnesses:

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